

Precision Prevention & Early Detection

Submitted by: Jennifer Barton, Ph.D.

A “PAP SMEAR” FOR OVARIAN CANCER

Recent research suggests that the deadliest form of ovarian cancer, high grade serous adenocarcinoma, actually originates in the fallopian tubes. The fallopian tubes can be accessed in a minimally invasive manner using highly specialized devices, e.g., a falloscope used via a hysteroscope, navigating through the tubal ostium.

What is the research problem?

Ovarian cancer is rarely detected early and most women who contract ovarian cancer will die of their disease. With no obvious symptoms in early stage, no effective screening techniques, and a deep, relatively inaccessible location in the body, early detection of ovarian cancer remains a tremendous problem.

What is your proposed solution?

We propose a method to collect cells from the fallopian tube and establish an abnormality score, which can be used in a way analogous to a Pap smear, for early detection of ovarian cancer. This method relies on the combination of innovative technologies: highly sensitive standardized genomics and proteomic platforms, and miniature endoscope development.

Sensitive genomics and proteomics analyses that are universally accepted will be used in the analysis. This will enable deposition of the information within national databases. The sensitivity of the techniques will mean that the exact area of fallopian tube abnormality does not need to be sampled, only a representative area. Since the fallopian tubes are so small in diameter, “state of the art” sub-mm endoscopes will be developed using the latest in optics and materials to navigate into the tubes, and obtain a scrape biopsy of epithelial cells.

How will your solution make a difference?

The creation of “state of the art” image-guided sub-mm endoscopes will enable minimally invasive sampling of the fallopian tube for early detection of ovarian cancer. The device development will be coupled with state of the art genomics and proteomics analysis that will allow data collection suitable for national cancer archive projects.